

REMARKS

Upon entry of the present Amendment-A, claims 1-11 are pending in the application, and of these claims, claims 1, 2 and 5-7 are each independent. Claims 1- 7 have been amended by the present amendment. New claims 8-11 have been added.

The above-identified Office Action has been reviewed, the references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present Amendment-A is submitted.

It is respectfully submitted that by the present amendment, all bases of objections and rejections set forth in the Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Interview with the Examiner

Applicant would like to thank the Examiner for the helpful and courteous telephonic interview he conducted with applicant's representative on November 16, 2009, in conjunction with Office Action of June 23, 2009. Prior to conducting the interview, applicant's representative sent, via facsimile, an informal draft of proposed claim amendments to the Examiner, and requested the review of same.

During the interview, the Examiner informed applicant representative that he has reviewed the draft of proposed claim amendments. The Examiner indicated that, pending further review, the proposed claim amendments overcome the claim objections, and 35 USC §101 rejection set forth in the Office Action.

The Examiner also indicated that, pending further search and review, the proposed claims amendments overcome the applied references, e.g., Higashi et al., Nakamichi, Nishizaki et al.,

and Vacante and the JP 63-128178. During the interview, it was also discussed to slightly revise language of claim 7 by specifying that during all positions of the steering system, said left and right rotational axes extend from said steering rotational axis to spread in a V-shape, in order to further define the claim 7 over the Nakamichi disclosure. Applicant has included all of the proposed/discussed claim amendments in this formal response to the Office. Accordingly, the present Amendment-A is believed to place the application in condition for allowance.

Amendments Presented

In the Abstract: Abstract of the disclosure of the present invention has been amended for limiting suggested word limit thereof to a 150 word counts.

In the Claims: claim 1 has been amended by specifying that the steering system includes a plurality of steering shafts operatively connected with each other; and that during all positions of the steering system, an axis of at least one of the steering shafts that is closest to the steering handle is inclined upwardly as it extends in a forward direction of said vehicle. Preamble of claim 1 has been amended by specifying that a steering system for carrying out steering of a vehicle in response to rotation of a steering handle.

Claim 2 has been amended by specifying that the steering system includes a steering shaft; that the left grip and said right grip are rotatable about an axis perpendicular to an axis of said steering shaft for selectively performing a leftward steering or a rightward steering of said vehicle; and that during steering operation, said left grip and said right grip are rotated in an operative association with each other, and in directions opposite to each other so that said left grip and said right grip move twistedly relative to each other. Preamble of claim 2 has been amended similar to claim 1.

Each of claims 3-4 has been amended for consistency and/or for correcting minor editorial/grammatical errors.

Claim 5 has been amended by specifying that the steering system includes actuators for steering the vehicle, and control units for controlling the operation of the actuators in response to the operation of the operating members; that a locus of operative movement of each of the operating members is on a respective spherical plane about a respective predetermined position which is rearward of the steering system; and that during steering operation, each of the left and right operating members is rotated in a same direction around respective rotational axis thereof. Preamble of claim 5 has been amended by specifying a steering system for a vehicle.

Claim 6 has been amended by specifying that the steering system for a vehicle includes actuators for steering said vehicle, and control units for controlling the operation of said actuators; and that both of said operating members when being moved upwards from their neutral positions, are moved in a direction outwardly from said neutral positions thereof and rearwardly. Preamble of claim 6 has been amended similar to claim 5.

Claim 7 has been amended by specifying that the steering system for a vehicle includes a steering shaft, actuators for steering the vehicle, and control units for controlling the operation of said actuators in response to the operation of said operating members, that the left and right operating members are rotatable about their left and right rotational axes while being rotated about a steering rotational axis of said steering shaft; and that during all positions of the steering system, said left and right rotational axes extend from said steering rotational axis to spread in a V-shape. Preamble of claim 7 has been amended similar to claim 5.

New claims 8-11 have been added. New claims 8 and 10 directly depend from claim 1, and define additional aspects thereof. New claim 9 depends from claim 2, and defines additional

aspects thereof. New claim 11 depends from claim 7, and defines additional aspects thereof.

Applicant respectfully submits that the above amendments, including new claims, are fully supported by the original disclosure including the drawings. Applicant also respectfully submits that no new matter is introduced into the application by the above amendments, including new claims, since the entire subject matter thereof was expressly or inherently disclosed in the original claims, specification and drawings.

Claim Objections

As stated above, in the Office Action (page 2, item 1), the Examiner objected to claims 2 and 7 for informalities.

Applicant's Response:

As stated above, applicant has amended claims 2 and 7, herein, as suggested by the Examiner in the Office Action. Specifically, applicant has amended claim 2 by deleting the redundant term “the” from the terms, “the said”; also amended claim 7 by replacing the terms, “is rotatable” with terms, -- are rotatable --.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's objection to claims 2 and 7.

Claim Rejections – 35 USC §101

In the Office Action (page 2, item 3), the Examiner rejected claims 1-7 under 35 USC §101, since in his view, the claimed invention is directed to non-statutory subject matter. The Examiner has taken a position that the recitation of terms “both hands of an occupant” and “left and right hands of an occupant” in claims 1, 2 and 5-7 are directed to non-statutory subject

matter, because in his view, a human being is being claimed. Also, in his view, the recitation of terms, “a left hand” and “a right hand” in claim 2, “the occupant’s elbows” in claim 5, and “the occupant” in claims 5-7 are all directed to non-statutory subject matter.

Applicant’s Response:

As stated above, applicant has amended claims 1-7, herein. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection, and submits that each of amended claims 1-7 overcome the §101 rejection set forth in the Office Action.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner’s rejection of claims 1-7 under 35 USC §101.

Claim Rejections – 35 USC §102

In the Office Action (page 2, item 4), the Examiner rejected claims 2-3 under 35 USC §102(e) as being anticipated by Higashi et al. (US 7,147,080) (hereinafter, “Higashi”).

Applicant’s Response:

As stated above, applicant has amended claims 2-3, herein. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection, and submits that each of amended claims 2-3 is patentably distinct over the disclosure of Higashi.

For example, applicant notes that Higashi discloses a steering means 3 for vehicle (twelfth embodiment). The steering means 3 of Higashi includes a rod-shaped steering bar 34 attached to one end of a column shaft 33 so as to cross the column shaft 33 (and an axis thereof) at a right angle. The steering bar includes a left grip 31 and a right grip 32. The steering wheel 30 or the steering bar 34 may be fixed so as not to be rotatable so that steering is performed only by a twisting operation of the left grip 31 and the right grip 32

(col. 16, lines 6-25; Fig. 12).

Thus, Higashi fails to disclose several required features of claim 2, e.g., during steering operation, said left grip and said right grip are rotated in an operative association with each other, and in directions opposite to each other so that said left grip and said right grip move twistedly relative to each other, as recited in amended claim 2.

Applicant also notes that Higashi fails to disclose a left grip and a right grip connected to each other by an interlocking mechanism so as to be rotated in opposite directions from each other, as required by claim 3. Rather, as discussed above, Higashi merely discloses the left grip 31 and the right grip 32 being connected with the column (steering) shaft 33, and performing steering by twisting the left and right grips 31, 32.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection of claims 2-3 under 35 USC §102(e).

Claim Rejections – 35 USC §103

1. In the Office Action (page 3, item 5), the Examiner rejected claim 1 under 35 USC §103(a) as being unpatentable over JP 63-128178 (cited by applicant) (hereinafter referred as "the 'JP 178'") in view of Nakamichi (JP 11-48985, also cited by applicant). According to the Examiner's interpretation, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the 'JP 178 system in view of teachings of Nakamichi to use a steering handle instead of a steering wheel in order to avoid troublesome twisting of occupant's wrist while attempting to steer the vehicle.

Applicant's Response:

As stated above, applicant has amended claim 1, herein. Upon careful consideration and

in light of the above amendments, applicant respectfully traverses such rejection, and submits that amended claim 1 is patentably distinct over the disclosure of the applied references considered either singly or in combination.

For example, although an axis of a steering shaft of the 'JP 178 appears to be inclined so as to be higher in level in a forward direction, such inclined steering shaft seems to be applicable only in a non-operative position thereof, as shown in his Figs. 3 and 5. In other words, as seen in Fig. 5 of the 'JP 178, such arrangement of the axis of steering shaft is applicable when an operator of a vehicle gets in (occupies) or gets out of (de-occupies) his seat, i.e., the steering shaft is inclined during non-operative state thereof.

Accordingly, a person of ordinary skill in the art would not consider it obvious to modify the 'JP 178 system in view of teachings of Nakamichi to use a steering handle instead of a steering wheel to achieve the claimed invention.

Moreover, in an effort to further define the claimed invention, as discussed with the Examiner, applicant has amended claim 1 by specifying that during all positions of the steering system, an axis of at least one of the steering shafts that is closest to the steering handle is inclined upwardly as it extends in a forward direction of said vehicle.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection of claim 1 under 35 USC §103(a).

2. In the Office Action (page 3, item 6), the Examiner rejected claim 5 under 35 USC 103(a) as being unpatentable over Nishizaki et al. (US 6,442,462) in view of Vacante (US 3,669,465). According to the Examiner's interpretation, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify Nishizaki's system in view of teachings of

Vacante to have locus movement of two operating members about a position of the occupant's elbow so that the occupant's arms are held in a comfortable horizontal position while steering the vehicle.

Applicant's Response:

As stated above, applicant has amended claim 5, herein. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection, and submits that amended claim 5 is patentably distinct over the disclosure of the applied references considered either singly or in combination.

For example, Nishizaki discloses a motor vehicle steering system. The steering system of Nishizaki includes a steering mechanism 10 for steering a pair of vehicle wheels W, W, a steering wheel 30 selectively mechanically engaged with the steering mechanism 10 via a clutch 20, and a counter-force actuator 40 for applying a reaction force to the steering wheel 30. In other words, in order to establish connection between the steering wheel 30 and the steering mechanism 10 in the event of malfunction of the steer-by-wire system, Nishizaki's system incorporates a mechanical coupling (the clutch 2) between the steering wheel 30 and the steering mechanism 10 for engaging the clutch in a conventional steer-by-wire system.

On the other hand, Vacante discloses a dual hand wheel steering assembly adapted to be substituted for a conventional steering system. The dual hand wheel steering assembly of Vacante includes left and right hand wheels and a gear box which is mounted on the existing steering shaft. During driving/steering operation, the left and right hand wheels are located such that operator's arms are held substantially horizontally.

Based on such actual disclosures of the applied references, a person of ordinary skill in the art would realize that for the sake of argument, even if the Nishizaki's system is hypothetically modified by substituting his steering wheel with left and right hand wheels as

taught by Vacante, the claimed steering system – having a locus of movement of each of the operating members by the operation provided by the occupant is on a spherical plane about a position of each of the occupant's elbows – cannot be achieved, because during steering operation, movement of the left and right hand wheels of Vacante is in a vertical plane, which is different from the claimed spherical plane about a position of each of the occupant's elbows.

Accordingly, the applied references, considered either singly or in combination, fail to disclose the limitations of claim 5.

Moreover, in an effort to further define the claimed invention, as discussed with the Examiner, applicant has amended claim 5 by expressly specifying that a locus of operative movement of each of said operating members is on a respective spherical plane about a respective predetermined position which is rearward of the steering system.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection of claim 5 under 35 USC § 103(a).

3. In the Office Action (page 4, item 7), the Examiner rejected claim 6 under 35 USC § 103(a) as being unpatentable over Nishizaki et al. (US 6,442,462) in view of Higashi. According to the Examiner's interpretation, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify Nishizaki's system in view of teachings of Higashi to have operating members move toward the occupant so that the occupant does not have to stretch both of his or her hands in order to steer the vehicle.

Applicant's Response:

As stated above, applicant has amended claim 6, herein. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection, and submits

that amended claim 6 is patentably distinct over the disclosure of the applied references considered either singly or in combination.

For example, as discussed above, Nishizaki's system includes a mechanical coupling (clutch) between the steering wheel 30 and the steering mechanism 10 for bringing the clutch into engagement 9 for establishing connection between the steering wheel 30 and the steering mechanism 10 in the event of malfunction of a conventional steer-by-wire system.

On the hand, Higashi's operation member (plate) 11 supported on one end of a supporting shaft 10 can freely swing around the axis of the supporting pin 12. A driver who has his seat facing the operation member 11, grips right and left edge portions of the operation plate 11 and perform a swinging operation in right and left directions by pushing and pulling the gripped portions, e.g., pushing a right edge of the operation member 11 for steering to the right (Fig. 1A).

Accordingly, a person of ordinary skill in the art would realize that, for the sake of argument, even if the Nishizaki's steering system is hypothetically modified by substituting his steering wheel with the operation member as taught by Higashi, such hypothetical modification would not achieve the claimed the claimed steering system – requiring the operating members, when being moved upwards from their neutral positions, are moved in a direction toward the occupant – because, steering operation of the Higashi's system requires pushing and pulling of the gripped portions (operation member), and does not require moving the gripped portions of the operating member in a direction towards the occupant.

Accordingly, the applied references, considered either singly or in combination, fail to disclose the limitations of claim 6.

Moreover, in an effort to further define the claimed invention over the references of record, as discussed with the Examiner, applicant has amended claim 6 by expressly specifying

that both of said operating members, when being moved upwards from their neutral positions, are moved in a direction outwardly from said neutral positions thereof and rearwardly.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection of claim 6 under 35 USC §103(a).

4. In the Office Action (page 5, item 8), the Examiner rejected claim 7 under 35 USC 103(a) as being unpatentable over Nishizaki et al. (US 6,442,462) in view of Nakamichi. According to the Examiner's interpretation, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify Nishizaki's system in view of teachings of Nakamichi to have operating members spread in a V-shape toward the occupant in order to avoid troublesome twisting of the occupant's wrist while steering vehicle.

Applicant's Response:

As stated above, applicant has amended claim 7, herein. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection, and submits that amended claim 7 is patentably distinct over the disclosure of the applied references considered either singly or in combination.

For example, as discussed above, Nishizaki's system includes a mechanical coupling (clutch) disposed between the steering wheel 30 and the steering mechanism 10 for bringing the clutch into engagement 9 for establishing connection between the steering wheel 30 and the steering mechanism 10) in the event of malfunction of a conventional steer-by-wire system.

On the hand, Nakamichi's steering system appears to include a vehicle steering handle 1 mounted at an end portion of a steering shaft. The steering handle includes a handle body 3, a left hand grip 5L and a right hand grip 5R. According to Nakamichi, when turning the steering

handle 1 counterclockwise by 180°, the right hand naturally twists to the left and such an overhand twist to the left is relatively easy and causes no major trouble; and that such set up permits the driver to turn the handle 1 counterclockwise by 180° without twisting left hand at all.

Accordingly, Nakamichi fails to disclose the left and right hand grips (operating members) being rotatable about their left and right rotational axes, while being rotated about a (steering) rotational axis, and the left and right rotational axes being inclined to spread in a V-shape toward the occupant. Rather, Nakamichi's left and right hand grips appear to be exchangeable with each other to facilitate turning of the handle 1 counterclockwise by 180° by right hand without twisting the left hand of the operator.

Therefore, for the sake of argument, even if the Nishizaki's system is hypothetically modified by combining Nakamichi's steering handle, as proposed by the Examiner, such hypothetical combination would not provide the claimed invention – requiring left and right operating members being rotatable about their left and right rotational axes, while being rotated about a steering rotational axis, and the left and right rotational axes being inclined to spread in a V-shape toward the occupant – as recited in claim 7. Rather, such hypothetical combination would provide a steering handle having left and right hand grip members disposed at respective end portions thereof.

Moreover, in an effort to further define the claimed invention, as discussed with the Examiner, applicant has amended claim 7 by expressly specifying during all positions of the steering system, said left and right rotational axes extend from said steering rotational axis to spread in a V-shape.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection of claim 7 under 35 USC §103(a).

Allowable Subject Matter

In the Office Action (page 5, item 9), the Examiner indicated that claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's Response:

Applicant gratefully acknowledges the Examiner's indication that claim 4 includes allowable subject matter.

Other Matters

Further, the additional references cited by the Examiner on the form PTO-892 included with the Office Action – US Patents: 3,196,709 to Bickford; 3,312,123 to Rumpf; 6,641,849 to De Cortanze; 6,343,526 to Reicks et al.; 7,007,769 to Hara et al.; and 7,421,925 to Korzan et al.; and Foreign Patent Documents: WO 8809279 to Nordstroem; EP 1350706 to Higashi et al.; JP 2005225384 to Tajima et al.; JP 2006056468 to Tada et al.; and JP 2007045413 to Suzuki – have been considered by applicant. Applicant respectfully submits that all of the present claims are patentably distinct over these references, whether considered singly or in combination.

New claims 8-11 are believed to be patentably distinct over the references record for the reasons provided in relation to respective claims 1, 2 and 7, and for additional merits thereof.

Conclusion

In conclusion, based on all of the foregoing, applicant respectfully submits that all of the objections and rejections set forth in the Office Action are overcome, and that as presently amended, all of the pending claims are believed to be allowable over all of the references of

record, whether considered singly or in combination.

Applicant requests reconsideration and withdrawal of the rejection of record, and allowance of the pending claims. The application is now believed to be in condition for allowance, and a notice to this effect is earnestly solicited.

A petition for two-month extension of time is being submitted herewith, and the fee (\$490) for same is being concurrently paid via EFS-Web.

If the Examiner is not fully convinced of the allowability of all of the claims now in the application, applicant respectfully requests that he telephonically contact applicant's undersigned representative to expeditiously resolve any issues remaining in the prosecution of the application.

Favorable reconsideration is respectfully requested.

Respectfully submitted,



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